

Serial No. 09/987,459
Docket No. NEC01P205-HIa
WAK.097

2

AMENDMENTS TO THE CLAIMS

1-4. (canceled)

5. (previously presented) An arrayed waveguide grating, comprising:
at least one input waveguide for inputting signal lights;
a plurality of output waveguides for outputting said signal lights;
a channel waveguide array including a plurality of waveguides, each successive waveguide of said plurality of waveguides being longer by a predetermined waveguide length difference;

an input slab waveguide connecting an input end of said channel waveguide array to said at least one input waveguide; and

an output slab waveguide connecting an output end of said channel waveguide array to said plurality of output waveguides, said output slab waveguide including a core layer disposed therein for propagating light therethrough, said core layer being partly cut off in selected paths therein, which interconnect said channel waveguide array and said plurality of output waveguides, and a cladding layer disposed in cut regions of said core layer and on opposite sides of said core layer, said cut regions in said selected paths including cut lengths set to predetermined values in a direction in which said signal lights propagate, depending on optical losses of said signal lights propagated in said selected paths.

6. (previously presented) An arrayed waveguide grating, comprising:
a plurality of input waveguides for inputting signal lights comprising different wavelengths;
at least one output waveguide for outputting said signal lights;
a channel waveguide array including a plurality of waveguides, each successive waveguide of said plurality of waveguides being longer by a predetermined waveguide length difference;

an output slab waveguide connecting an output end of said channel waveguide array to said at least one output waveguide; and

Serial No. 09/987,459
Dock t No. NEC01P205-HIa
WAK.097

3

an input slab waveguide connecting an input end of said channel waveguide array to said plurality of input waveguides, said input slab waveguide including a core layer disposed therein for propagating light therethrough, said core layer being partly cut off in selected paths therein, which interconnect said channel waveguide array and said plurality of input waveguides, and a cladding layer disposed in cut regions of said core layer and on opposite sides of said core layer, said cut regions in said selected paths including cut lengths set to predetermined values in a direction in which said signal lights propagate, depending on optical losses of said signal lights propagated in said selected paths.

7. (previously presented) An arrayed waveguide grating, comprising:

at least one input waveguide for inputting signal lights;

a plurality of output waveguides for outputting said signal lights, said plurality of output waveguides including at least one core layer disposed therein for propagating light therethrough, said core layer being partly cut off, and a cladding layer disposed in cut regions of said core layer and on opposite sides of said core layer, said cut regions including cut lengths set to predetermined values depending on optical losses of said signal lights propagated in said plurality of output waveguides;

a channel waveguide array including a plurality of waveguides, each successive waveguide of said plurality of waveguides being longer by a predetermined waveguide length difference;

an input slab waveguide connecting an input end of said channel waveguide array to said at least one input waveguide; and

an output slab waveguide connecting an output end of said channel waveguide array to said plurality of output waveguides.

8. (previously presented) An arrayed waveguide grating, comprising:

a plurality of input waveguides for inputting signal lights comprising different wavelengths, said plurality of input waveguides including at least one core layer disposed therein for propagating light therethrough, said core layer being partly cut off, and a cladding layer disposed in cut regions of said core layer and on opposite sides of said core layer, said

Serial No. 09/987,459
Docket No. NEC01P205-HIa
WAK.097

4

cut regions including cut lengths set to predetermined values depending on optical losses of said signal lights propagated in plurality of input waveguides;

at least one output waveguide for outputting said signal lights;

a channel waveguide array including a plurality of waveguides, each successive waveguide of said plurality of waveguides being longer by a predetermined waveguide length difference;

an input slab waveguide connecting an input end of said channel waveguide array to said plurality of input waveguides; and

an output slab waveguide connecting an output end of said channel waveguide array to said at least one output waveguide.

9. (canceled)

10. (previously presented) An arrayed waveguide grating, comprising:

a channel waveguide array including a plurality of waveguides, each successive waveguide of said plurality of waveguides being longer by a predetermined waveguide length difference;

an input slab waveguide including an output end connected to an input end of said channel waveguide array;

at least one output waveguide for outputting signal lights;

an output slab waveguide connecting an output end of said channel waveguide array to said at least one output waveguide; and

a plurality of input waveguides connected to a surface of an input end of said input slab waveguide,

wherein central axes of selected input waveguides are displaced along a direction perpendicular to central axes of said input waveguides from corresponding focusing positions by predetermined values to attenuate said signal lights propagated through said selected input waveguides to said at least one output waveguide.

11. (canceled)

Serial No. 09/987,459
Docket No. NEC01P205-HIa
WAK.097

5

12. (previously presented) An arrayed waveguide grating, comprising:
a channel waveguide array including a plurality of waveguides, each successive waveguide of said plurality of waveguides being longer by a predetermined waveguide length difference;

an input slab waveguide including an output end connected to an input end of said channel waveguide array;

at least one output waveguide for outputting signal lights;

an output slab waveguide connecting an output end of said channel waveguide array to said at least one output waveguide; and

a plurality of input waveguides connected to a surface of an input end of said input slab waveguide,

wherein central axes of selected input waveguides are inclined from a perpendicular to said surface at a focusing position to attenuate said signal lights propagated from said selected input waveguides to said at least one output waveguide.

13-15. (canceled)

16. (currently amended) An arrayed waveguide grating, comprising:
a channel waveguide array including a plurality of waveguides, each successive waveguide of said plurality of waveguides being longer by a predetermined waveguide length difference;

an input slab waveguide including an output end connected to an input end of said channel waveguide array;

at least one output for outputting signal lights;

an output slab waveguide connecting an output end of said channel waveguide array to said at least one output waveguide; and

a plurality of input waveguides connected to an input end of said input slab waveguide,

wherein ~~lengths, which extend from ends of selected input waveguides to light transmission points of said channel waveguide array, are displaced along propagation axes of~~

Serial No. 09/987,459
Docket No. NEC01P205-HIa
WAK.097

6

~~said selected input waveguides from corresponding focusing positions said input end of said input slab waveguide partially projects toward ends of selected input waveguides from a cophasal plane of corresponding focusing positions, such that each of said selected input waveguides is displaced along its propagation axis by a shifted focus distance in a direction away from said cophasal plane to attenuate said signal lights propagated from said selected input waveguides to said light transmission points of said channel waveguide array.~~

17-30. (canceled)

31. (previously presented) A waveguide device, comprising:
at least one input waveguide for inputting signal lights;
a plurality of output waveguides for outputting signal lights; and
a slab waveguide interposed between said at least one input waveguide and said plurality of output waveguides, said slab waveguide including a core layer disposed therein for propagating light therethrough from said at least one input waveguide,
wherein said core layer is partly cut off in selected paths therein, which interconnect said at least one input waveguide and said plurality of output waveguides, and a cladding layer disposed in cut regions of said core layer and on opposite sides of said core layer, said cut regions in said selected paths including cut lengths set to predetermined values in a direction in which said signal lights propagate, depending on optical losses of said signal lights propagated in said selected paths.

32. (previously presented) A waveguide device, comprising:
a plurality of input waveguides for inputting signal lights;
at least one output waveguide for outputting signal lights; and
a slab waveguide interposed between said plurality of input waveguides and said at least one output waveguide, said slab waveguide including a core layer disposed therein for propagating light therethrough from said plurality of input waveguides to said at least one output waveguide,
wh rein said core layer is partly cut off in selected paths therein, which

Serial No. 09/987,459
Docket No. NEC01P205-HIa
WAK.097

7

interconnect said plurality of input waveguides and said at least one output waveguide, and a cladding layer disposed in cut regions of said core layer and on opposite sides of said core layer, said cut regions in said selected paths including cut lengths set to predetermined values in a direction in which said signal lights propagate, depending on optical losses of said signal lights propagated in said selected paths.

33. (previously presented) A waveguide device, comprising:
at least one or plural input waveguide for inputting signal lights;
a slab waveguide having an input end connected to said input waveguides; and
an output waveguide including a plurality of waveguides, wherein each of selected waveguides of said plurality of waveguides include a core layer disposed therein for propagating light therethrough, said core layer being partly cut off, and a cladding layer disposed in cut regions of said core layer, said cut regions including cut lengths set to predetermined values depending on optical losses of said signal lights propagated in said selected waveguides; and
a slab waveguide interconnecting said at least one input waveguide and said output waveguide including a plurality of waveguides.

34. (previously presented) A waveguide device, comprising:
an input waveguide including a plurality of waveguides for inputting signal lights,
wherein each of selected waveguides of said plurality of waveguides include a core layer disposed therein for propagating light therethrough, said core layer being partly cut off, and a cladding layer disposed in cut regions of said core layer and on opposite sides of the core layer, said cut regions including cut lengths set to predetermined values depending on optical losses of said signal lights propagated in said selected waveguides;
at least one output waveguide for outputting said signal lights; and
a slab waveguide interconnecting said input waveguide and said at least one output waveguide.

35. (canceled)

Serial No. 09/987,459
Docket No. NEC01P205-H1a
WAK.097

8

36. (previously presented) A waveguide device, comprising:
an output waveguide; and
a plurality of input waveguides connected to a surface of an input end of a slab waveguide,
wherein central axes of selected input waveguides are displaced along a direction perpendicular to central axes of said input waveguides from corresponding focusing positions by predetermined values to attenuate said signal lights propagated through said selected input waveguides to said output waveguide.
37. (canceled)
38. (previously presented) A waveguide device, comprising:
at least one output waveguide for outputting signal lights; and
a plurality of input waveguides connected to a surface of an input end of a slab waveguide,
wherein central axes of selected input waveguides are inclined from a perpendicular to said surface at a focusing position, corresponding to each of said selected input waveguides, to attenuate said signal lights propagated from said selected input waveguides to said at least one waveguide.
39. (canceled)
40. (currently amended) A waveguide device, comprising:
at least one output waveguide for outputting signal lights; and
a plurality of input waveguides connected to an input end of a slab waveguide,
wherein ~~selected widths of~~ selected input waveguides, which are axially aligned with corresponding focusing positions, ~~comprise predetermined values to attenuate a first end width and a second end width at said slab waveguide, such that attenuation of said signal lights, which are output, corresponds to attenuation of lights input through said first end width and said second end width.~~

Serial No. 09/987,459
Docket No. NEC01P205-H1a
WAK.097

9

41. (canceled)
42. (currently amended) A waveguide device, comprising:
at least one output waveguide for outputting signal lights; and
a plurality of input waveguides connected to an input end of a slab waveguide,
wherein each of selected input waveguides is displaced along its propagation axis by a shifted focus distance in a direction away from a cophasal plane of focusing positions ~~lengths, which extend from ends of selected input waveguides are displaced along propagation axes of said selected input waveguides from corresponding focusing positions to~~ attenuate said signal lights propagated from said plurality of input waveguides to said at least one output waveguide.

43-48. (canceled)